

Combat Crew



JULY 1978

★★★★★

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

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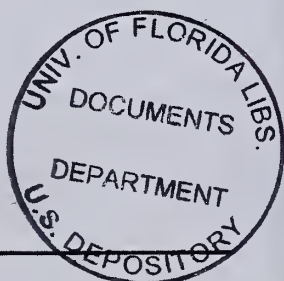
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ON OUR COVER

Launch support team chief, Captain Dave Hoffman, and security policeman, Sgt Chester Evans, are symbolic of the many contributors to Vandenberg's impressive safety record. See page 4.

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COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitious. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF. Contributions are encouraged, as well as comments and criticisms. Direct correspondence with the Editor is authorized. Address correspondence to Editor, COMBAT CREW, Hq SAC/IGFC, Offutt AFB, Ne. 68113.

AWARDS



General Thomas S. Power Award

During the awards ceremony at the recent SAC Commanders' Conference, BUSY GIANT XII, SSgt Craig L. Heimberger, 44th SMW, Ellsworth AFB, was presented the General Thomas S. Power Award. This identifies SSgt Heimberger as the Strategic Air Command Maintenance Airman of the Year for 1977. The significance of this award is reflected by the fact that approximately 30,000 SAC personnel serving in the aircraft, missile and munitions maintenance specialties were in competition. Individuals must have been previously selected for SAC Maintenance Airman of the Month award in order to be eligible for the final selection process. Thus, the Thomas S. Power award represents selection from an elite group of skilled maintenance personnel who have demonstrated their professional competence. This is the highest individual award given to a SAC maintenance technician.

Chief of Staff Individual Safety Award

Captain Kenneth S. Harvell, 4235th Instructional Systems Development Squadron, Carswell AFB, has been designated to receive the Chief of Staff Individual Safety Award for CY 1977. The award is for Air Force members or civilian employees who have made the most significant contributions to safety. He distinguished himself by developing a variety of safety instructional programs. The "Crash Survival" and "The Thule Accident, Are You Prepared?" videotapes produced by Captain Harvell are excellent examples of his many contributions to the Air Force mishap prevention effort.



UNITED STATES AIR FORCE FLIGHT SAFETY PLAQUE

Flight Safety Plaques are awarded to Air Force organizations below air division level for meritorious achievement in flight safety.

6 Strategic Wing
22 Bombardment Wing
42 Bombardment Wing
55 Strategic Recon Wing

92 Bombardment Wing
307 Air Refueling Group
319 Bombardment Wing

UNITED STATES AIR FORCE NUCLEAR SAFETY PLAQUE

The Nuclear Safety Plaques are awarded annually to Air Force and ANG organizations below MAJCOM level for outstanding achievement in, or contribution to, nuclear safety during each calendar year.

44 Strategic Missile Wing
90 Strategic Missile Wing
97 Bombardment Wing
341 Strategic Missile Wing
351 Strategic Missile Wing

UNITED STATES AIR FORCE EXPLOSIVES SAFETY PLAQUE

The Explosives Safety Plaque is awarded annually to Air Force organizations below MAJCOM level for outstanding achievement in, or contribution to, explosives safety during each calendar year.

43 Strategic Wing

UNITED STATES AIR FORCE MISSILE SAFETY PLAQUE

The Missile Safety Plaques are awarded annually to Air Force organizations below MAJCOM level for outstanding achievement in, or contribution to, missile safety during each calendar year.

28 Bombardment Wing
42 Bombardment Wing
319 Bombardment Wing

91 Strategic Missile Wing
308 Strategic Missile Wing
321 Strategic Missile Wing
381 Strategic Missile Wing

Countdown



for safety

... the 1st STRAD story

A note of thanks . . . Credit is given to the entire 1st STRAD Safety staff and other 1st STRAD base organizations for their contributions and inputs for this article. Particular thanks goes to CMSgt James E. Purvis, TSgt Walter F. Bailey, and SSgt Guy D. Mangus, all of the 1st STRAD Safety Office; and to SSgt John Reed, 1369th AVS (photographer); and to Colonel Leon J. Kroenke, director of safety at 1st STRAD.

The chill of the night ocean air slipped around and under the collar of the safety technician as he stood in the almost total darkness of Fallback 23. The Pacific Ocean waves smashed relentlessly against the cliffs almost a hundred feet below and occasionally the spray, caught by an updraft of air, caused a damp and salty mist to settle on his face and lips. The ceaseless and timeless pounding of the ocean had always been a source of awe to the sergeant. Compared to the power unleashed on Vandenberg's thirty-five mile coastline by these restless waves, man's efforts seemed insignificant.

The communications checks which were being broadcast over the countdown loudspeaker reminded him abruptly that man's efforts are the source of the job at hand. Staff Sergeant George LaCombe, safety technician and Launch Support Team controller, and his team chief, Missile Safety Officer Captain Craig Washburn, both from the 1STRAD Missile Safety Division, would be controlling a launch support team which included security police, maintenance technicians, firefighters,

photographers, and other support elements for Operation Glory Trip 180M. Sergeant LaCombe would also assist the team chief as on-scene commander of the disaster control team in the event of a land impact mishap. LaCombe quickly pushed that thought to the back of his mind; his memories of the last mishap were still much too vivid. The missile had been a Navy target missile, a BO-MARC. The missile had made a normal lift-off but suddenly decided to return to its nest. Its almost full fuel load had caused an explosion and fire of the type you don't quickly forget.

He looked at the man sitting in the blue truck parked alongside. The occupant, Staff Sergeant Evans of the Missile Operations Support Branch of the Security Police Squadron, gave an affirmative nod which LaCombe relayed to the team chief with a high sign. As soon as the loudspeaker demanded "CSO, verify that missile flight hazard and caution area roadblocks are activated and area security checks are in progress," the captain, who also functioned as complex safety officer during SAC launches, reported, "CSO, verified."

A look at the security police controller was reassuring. Cool and confident, he was directing a last sweep of the beach. From the experience of many launches, he knew that in twenty minutes the Launch Director would ask for verification that a 1200-foot radius around the launcher was cleared for command destruct checks. Sergeant LaCombe was about to climb into the launch support van to escape the chill of the ocean air when one of three direct line telephones jingled for attention. Before he could respond, the captain lifted the receiver and responded, "CSO."

"Thanks," he grunted as he returned the phone to its cradle. "Command Post advised marginal weather downrange. Possible hold at T minus 10."

"Here we go again," an unknown voice mumbled from the darkness.

"That's why we have a four-hour window for launch," responded another voice which reflected half jest and half annoyance.

The voices were from the maintenance team, LaCombe suspected. A

(Upper left) Exotic missile fuels abound on Vandenberg. Their toxic and explosive characteristics require special care in handling and storage. (Upper right) At the fallback area, the launch support team checks in with the launch operations control center prior to launch. (Left) The rocky shores typical of Vandenberg's 35 mile coastline.



(Left) Refurbishment crew prepares to be lowered into the launch tube for a "deep hole" inspection. Theirs is a highly skilled and specialized task requiring close coordination. (Below) Early residents of Vandenberg. (Lower left) A graphic reminder that Vandenberg was once an Army artillery range. Unexploded ordnance is still found today.



COMBAT CREW

team from the 394th ICBM Test Maintenance Squadron and one from the operational base task force were nearby. The 394th personnel in conjunction with the task force had spent many hours bringing the missile to a strategic alert configuration and ready for its "Glory Trip." Now they were waiting anxiously for lift-off to witness the results of their efforts. This missile had been selected at random from SAC's alert fleet and transported by air or rail to Vandenberg for test. The 394th had installed a destruct system and instrumentation wafer and, of course, the nuclear warhead had been replaced by telemetry and scoring equipment; but the missile and all related hardware was identical to hundreds standing alert in concrete and steel silos at operational bases in the northern tier.

This launch, like every Glory Trip, was a realistic evaluation of the system reliability and the professionalism of its personnel.

"CSO, verify LF clear for command destruct and safe and arm checks."

"CSO, verified."

Command destruct. Sergeant LaCombe envisioned the missile flight control officer sitting at his console, waiting. During the missile flight, he would monitor the trajectory on his display panels, ready to terminate the flight in a giant ball of flame if the missile strayed from its programmed course. He recalled watching the 394th TMS personnel carefully install the linear shape charge along the raceway which ran the length of the rocket motors. Even though he had been on an official safety inspection, he had received a thorough briefing before he was allowed to enter the destruct package installation facility. In this business, hazardous tasks are the rule rather than the exception, and everybody knew it.

The telephone calls and radio

transmissions became less frequent as key personnel took their duty stations and made ready for count pick-up. Two persons were at the roadblock enroute to a tracking camera site; a third party was not on the access list but declared himself extremely essential to the operation. A phone call for verification and he was on his way. LaCombe was about to comment on the subject of access lists when the loudspeaker came to life.

"In 30 seconds countdown for Glory Trip 180 Mike will commence on my mark. Fifteen . . . 10 . . . 5, 4, 3, 2, 1, MARK! T minus 30 minutes and counting. All stations monitor the countdown net continuously until launch operation is terminated."

The countdown continued; the Launch Director's voice was clear and distinct as he issued instructions with a confidence reflecting careful planning and many rehearsals. Plan-

Continued on page 26



Just a few of the many deer to be found roaming Vandenberg's expanse. Their presence on roadways poses a problem.

Lt Gen Edgar S. Harris, Jr., former vice commander, SAC, joined Maj Gen D. L. Gray, 1st STRAD commander, at the Olympic Arena '78 activities. Vandenberg is always the host for SAC's missile competitions and just one of the many responsibilities of the 1st STRAD.

Button up! SSgt David Newman completes T-beam installation for Minuteman missile destruct system. The missile will be launched from Vandenberg to a target in the South Pacific.



Do you think they'll buy it if we tell them the Christians attacked the air base and spread JP-4 across the city?



SOME HAZARDS OF DEPLOYMENT

The events described in this article took place on a CORONET WEST deployment. Too many times we hear of the gross mistakes and misfortunes of others and too quickly we respond with the famous retort, "That could never happen to me." Yes, it can happen to you and I strongly urge you to take a few minutes, think about it, and realize it. You can prevent it from happening to you only through a meticulous respect for the gravity of your profession.

Major Hugh R. Gregory
28 BMW, Ellsworth AFB

Let me tell you about it. You know we just got back last Friday; we were supposed to get back the Friday before, but that blizzard delayed us a week. Sure am sorry I missed that alert tour.

We went out to March on the 21st. I don't know why we didn't leave there until the 25th, but I sure did enjoy L.A. Rented a car and had a good time. One day we had to go in for a briefing; only lasted an hour or two; the rest of the time was ours. The staff people out there sure know how to run gaggles.

In most cases you are afforded one or two extra days at the task force departure base. The purpose is threefold: provide a buffer in case of stragglers, insure time for adequate briefings and individual preparation, and finally, have enough time to insure crews obtain essential crew rest prior to deployment. Generally speaking, there is always enough time for preparation, crew rest, and enjoying oneself. Good judgment and realistic priorities must prevail however.

Well anyway, on the day we finally deployed, we had an early wake-up. I wished I had gotten in the sack earlier the night before.

Always attempt to get a good night's sleep prior to flight. These missions demand the strictest discipline and without proper rest this type of perform-

ance is impossible. Additionally, the rest afforded at the coming intermediate stops is minimal and your body really starts to run down. Don't deny yourself the opportunity of performing to your highest capabilities.

Guess what? It was raining like hell; I thought it never rained in Southern California. In fact, at the pre-takeoff briefing, the weather forecaster said they encountered only four or five thunderstorm days a year, but with my luck I had to hit one. Thunderstorms? When I questioned the forecaster about them, he could give very little information on their intensity. Can you imagine thunderstorms only four or five days a year and we have to fly five cells of four aircraft each out of there on one of these days.

Thunderstorms are very infrequent at Riverside. So infrequent, in fact, that the cost of having and maintaining a weather radar is not justified and they do not have any radar. When these conditions occur, it is mandatory to crank up your aircraft radar, locate the activity, and plan your attack prior to takeoff.

At the completion of the pre-takeoff briefing we were directed to meet with our cell leader for his briefing. It didn't amount to anything. I figured they just did it in order to comply with some regulation.

Never treat this briefing with less than the highest priority. T.O. 1-1C-1-3 directs its accomplishment and provides the minimum items that must be covered. Always insure all items are thoroughly covered. Failure to brief and coordinate procedures will turn a cell mission into a nightmare.

Out on the flight line, things went super with the exception of the glitch with our passengers. I don't think the boom ever got caught up with the Form F until we landed.

Follow task force instructions on manifesting passengers. This is not the time for the boom operator to be reaccomplishing the weight and balance form. You're flying at heavy weights from strange fields and all crewmembers are taxed to their limits.

Here we are already to roll, number two, second cell, and on comes the number three hydraulic pump failure light. You know that light flickered a time or two on the way out, but we didn't think anything of it. Super maintenance out there, they had us fixed in time to put us as number two in the fourth cell.

Always take advantage of the flight to the staging base. Look your aircraft over very carefully and write up every problem and malfunction encountered no matter how insignificant they may appear. The success of any deployment is dependent on the quality of the aircraft involved.

Takeoff roll was extra long, but off we went. With the thunderstorms around I wanted to know exactly where the leader was so I didn't waste time using beacon function. I went immediately to search function in order to get a skin paint. You know, I never did get a skin paint on him.

When departing in cell formation use beacon function. Ground clutter will prevent any chance of obtaining a skin paint with preceding aircraft using search function. Over-water takeoffs are an exception.

We went IFR at 1000 feet and things started to happen fast. I never heard so many people on the radios or experienced so many departure control frequency changes. Anyway, I was trying to find out where lead was and I heard ATC tell lead he was cleared to deviate south of Oceanside to avoid a bumper. Then I heard lead acknowledge and say he would hold heading 170 until clear so I told my pilot to do likewise. A few minutes later I heard Los Angeles center asking lead if he was part of our cell. He acknowledged he was. Center then wanted to know why he wasn't with the rest of us. Instead of holding a heading of 170 and going south of Oceanside he had turned to a heading of 270 and went north of Oceanside.

Sound hairy? It should! Here are all the ingredients of a mid-air collision and an ATC violation.

Cell formation flying leaves very little room for error.

Fortunately, we started breaking out at around 17,000 feet and we found lead 35 miles to the north. Adding to the confusion, it's now only 22 minutes to our ARCT with five F-4's. Throttles to the wall, but we never seemed to gain.

SAC tactical doctrine provides suggested speed schedules to facilitate cell joinup. If lead keeps his power up and fails to maintain an appropriate speed, the remainder of the cell may never catch him. Good cell procedures demand coordination by all cell members. That cell leader's briefing seems to be becoming more significant all the time; however, now it's too late to do anything about it.

Then I heard the receivers starting the rendezvous with lead and we are still 35 miles behind. Lead decided he had no time to orbit and he pressed toward the chicks, 50, 40, 30 turn range. We were about 30 miles behind and I was going out of my mind trying to figure when to turn in order to accomplish a good joinup. Finally we got lucky; the pilot made a visual, eyeballed a turn, and slipped in pretty slick.

Do you ever get out from between a rock and a hard spot? Not the way you prepared for and executed on this deployment. The first glitch just slid you into the next two, these generated the next, and on it goes. Hopefully, by now you realize the value of planning, preparation, and briefing.

We were heading down the AR track in good cell formation and finally I thought I could relax for a minute. I wouldn't want to go through that again for a day or two.

First AR complete and everything was looking good. Suddenly lead calls up and says let's take 30 degrees right. Gosh, I thought we were on course. A quick TACAN fix shows us a couple of miles north of track, but now heading off to the north at a rapid rate. We were in a pretty narrow corridor with restricted areas on both sides. I decide to call lead and at the same time he announces going left; okay, I think, he's caught it. Not 60 degrees left! What the hell is going on? Am I going nuts? I call him, he says he's taking us around thunderstorms. Thunderstorms? it's clear and a million. Oh yes, he replies, and starts his turn back to the correct heading. The poor navigator was painting weather in the clouds and altering around them; unfortunately his pilots failed to tell him we were 10,000 feet above the tops and he hadn't bothered to look out the window. Very embarrassing I thought.

How many times have you been told crew coordination is an essential element needed to fly the KC-135. This cannot be overemphasized and it is especially true when flying in cell or during weather

HIGH SPEED abort

Capt Hollis R. Bagley
2 BMW Barksdale AFB

avoidance. Weather avoidance requires maximum pilot-navigator coordination.

Again, I think I'm caught up and trying to relax for a minute. I can't quite get that damn bingo fuel computation right and it's bothering me. It was explained during the general briefing. Instead of asking for clarification, I just sat there afraid of looking like a dummy in front of the rest of the guys.

Never depart a briefing with doubt as to what's expected of you. The sole purpose of this briefing is to arm you with the information and knowledge needed to accomplish the mission. Computation of bingo fuel is one of the most critical and important tasks required of you. To strike out on this mission without a thorough understanding of bingo fuel procedures is nonsensical.

I wasn't concerned about navigation because we were PINS equipped. I had the boom take a few shots on the way over just to evaluate his shooting. Pretty good, I thought, only three to four miles off. I thought his shooting was three to four miles off until we landed and found the INS three and a half miles off. You know, that made me a believer in celestial navigation.

PINS is an aid to navigation. When PINS equipped, you don't forget or dump your other usual methods. To the contrary, you maintain your usual procedures and use the PINS as an additional aid in resolving positions. Frequently your receiver is INS equipped, providing still another positioning aid. Constantly compare the PINS information against your normal procedural work and the global flight plan. If significant differences start to appear you can be certain of an error somewhere.

We completed the last refueling and the chicks left. Getting close to Hickam and I can already taste the mitais. All of a sudden, the lead starts this wild turning business again. Must be an ID maneuver. I have us right on course. Now I can hear Honolulu center and the controller is obnoxiously giving lead a vector to the next point. It seems they expect you to be on course in their area. Later, after talking to the lead navigator, I learned his pilot had given him a radial and DME off of Honolulu VORTAC. Unfortunately they had Molokai tuned in the nav aids instead of Honolulu.

What a classic error. If you think it can't happen, just talk to some of your Stan/Eval people and ask them how many times it's happened on check rides. Believe; it can happen and yes, Honolulu center does expect you to be on course in their area. The amount of departures and arrivals here is staggering. Additionally, the close proximity of these routes demands precision navigation.

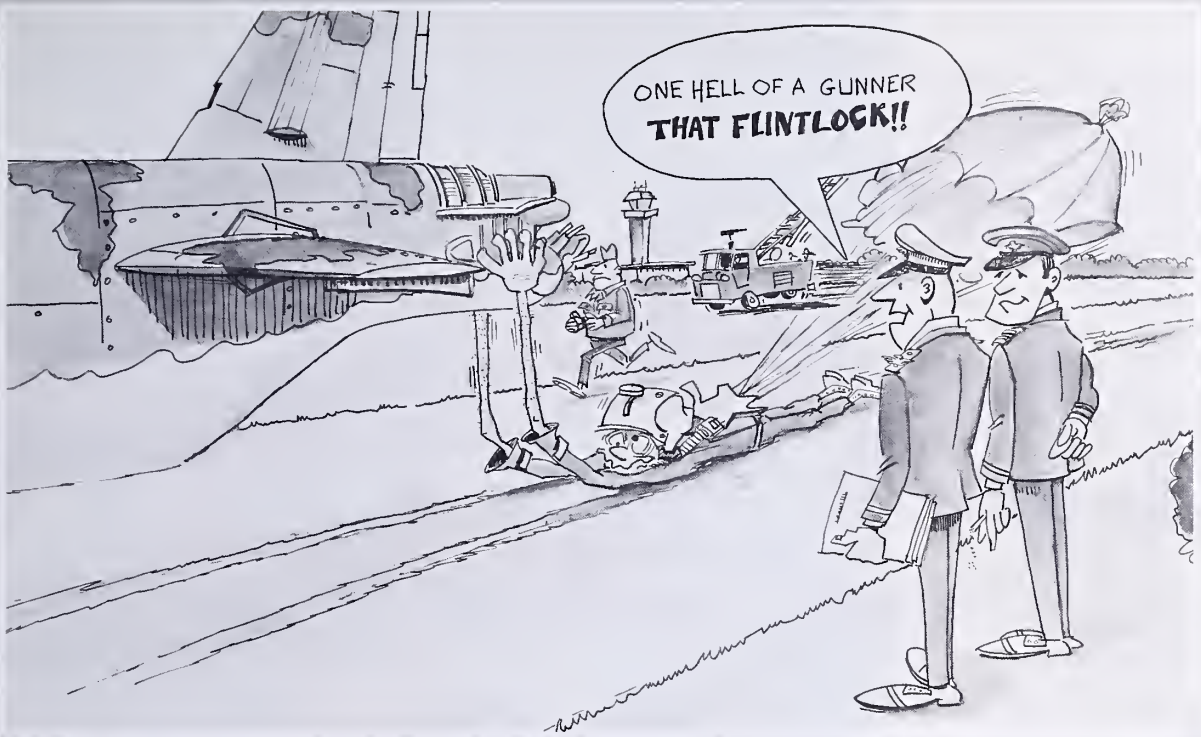
Continued on page 23

The mission was planned as a normal crew training sortie with a late afternoon takeoff. On the bus ride to base operations we noted the overcast sky and anticipated numerous weather deviations along our route. Just as we were departing base operations, a heavy shower passed over the field necessitating an alert scramble for the bus. Throughout the preflight, rain continued to fall and it stopped just prior to engine start.

After taxiing to the active runway and while waiting to make our controlled departure, we reviewed our takeoff data and takeoff/abort procedures. The previous shower had left the taxiways and runway wet with standing water. The wet RCR and 425,000 pounds takeoff gross weight combined to significantly reduce our planned decision distance and decision speed. The new takeoff data committed us to a takeoff very early in the ground run, allowing adequate remaining runway in which to stop the aircraft if we aborted.

At our scheduled departure time I pushed up the eight throttles and slowly turned the aircraft onto the runway. As the engines roared to life, the co-pilot completed final adjustments to the takeoff throttle settings and called for water injection. After initiation of the water switch, the cockpit gauges confirmed the increased thrust of the engines. The heavy bomber slowly began accelerating, gaining momentum. At 70 KIAS, timing was started and soon the navigator announced the expiration of the computed time as the aircraft passed through the required decision speed. At this point, based on aircraft performance, I announced to the crew my decision to continue the takeoff and relinquished control of the throttles to the co-pilot.

Shortly thereafter, I felt a strong vibration in the aircraft which was followed by two muffled reports. After seeing the RPM and EPR gauges on numbers 5 and 6 engines decrease rapidly and experiencing some lateral control problems, I initiated abort procedures. Immediately after retarding the throttles I raised the airbrakes, applied the brakes and instructed the co-pilot to deploy the drag chute. We were now approximately 3000 feet down the runway with 7500 feet of runway remaining. With normal braking and a functional drag chute the air-



craft had a stopping distance of approximately 6450 feet, 1000 feet from the overrun.

Applying the brakes at high speeds and heavy aircraft gross weight produces no perceptible deceleration. I waited for the assuring "tug" against the aircraft as the big 44 foot drag chute deployed. This time, however, the familiar feeling was absent because the drag chute had streamered when it deployed. Without the additional drag, our stopping distance increased by 2000 feet to 8450 feet. Now in stead of 1000 feet of runway remaining we were planning to stop, at best, at the end of the overrun. My overwhelming thought was of the rough terrain beyond the overrun and the 240,000 pounds of JP-4 onboard. As the runway remaining markers passed by without any indication of the aircraft slowing down, the temptation to disengage the anti-skid protection for the brakes was strong. To have done so would have resulted in failed tires and an even more dangerous situation. Fortunately, the wheel brakes on our aircraft functioned at full capacity and the aircraft finally came to stop halfway into the overrun where we shut down engines and evacuated the aircraft.

I learned several lessons from my "wild ride" and hopefully I can pass them on to you less dramatically than I acquired them. First, be mentally prepared for takeoff. I'm sure, that like me, you've thought through your takeoff procedures and discussed them in detail with your crew, but how much is habit and how much is tailored to the specific takeoff? With normal decision speeds higher than the speed at which we aborted, I was accustomed to still being able to stop the aircraft at that point in the takeoff. Although my decision to abort was more of a reaction to aircraft performance than a belief that I

could "beat the takeoff data," I'm sure the feeling of being early in the takeoff roll must have influenced it. However, if you are inclined to believe that the performance data is padded, don't! On a hot day, with a heavy aircraft, your normal 4000' decision distance exceeds the 23 RCR with a dry runway. Under these conditions, do you back off the decision distance? From the results of our abort I can testify that the Boeing data works exactly as advertised.

The next lesson is difficult to express on paper because each takeoff emergency situation is unique and there are no hard and fast rules covering judgment. However, if I can pass on the benefit of my experience, don't allow yourself to become so engrossed in the emergency that you can't still fly the aircraft. In our case things happened quickly and I was busy analyzing the problem and, in the process, the significance of already being committed to take-off was lost.

Specifically, for a heavy weight or high speed abort situation, don't abort after S1 speed unless, as the dash 1 states, "... the emergency renders the aircraft definitely unsafe to attain emergency bailout altitude," and then be prepared for the aircraft not to stop on the runway. If you do abort, plan on the drag chute not deploying. It could be the one time that it fails you. Recognize that the impulse to cut off the anti-skid may be present no matter how well ingrained the correct procedure is. Finally, consider shutting down the outboard engines as soon as possible to help slow the aircraft.

The lessons I learned were sobering and humbling; however, 500' more and they might have been written by someone else.

B-52G air
ejector valves

Happiness is an on time takeoff



CMSgt Ed Yingst
HQ SAC/LGME, Offutt AFB

By now all B-52G units should have received operational supplement 1B-52G-1S-277 to the Dash One flight manual. The procedures outlined in this supplement allow ground operation of any engine with an inoperative air ejector valve for up to 45 minutes if the throttle is kept at idle (except to check stabilizer trim). This procedure replaces the existing one which is considerably more restrictive and which has caused disruption of taxi operations, some late takeoffs and mission cancellations. So that aircrews will not feel that the new time limit was selected arbitrarily, we would like to give a little background to support the new procedure.

In early 1976, several complaints were received concerning late takeoffs and mission cancellations due to inoperative air ejector valves. As a result, SAC's Aircraft Engineering Division (LGME) in-

initiated a project to investigate these complaints. During a one-year time span (Oct 75-Sep 76), 25 B-52G late takeoffs were attributed to the oil cooler system; one-half were charged to air ejector valves. However, during that time frame, it was accepted practice at some bases to shut down an engine with a faulty air ejector valve, taxi to the hammerhead, restart the engine and take off. Therefore, the data above are highly conservative. Considerably more late takeoffs and mission cancellations would have been generated had not the shutdown restart procedure been accomplished.

During ground operation, the air ejector valve allows 16th stage air to flow out the exhaust port, pulling cool ambient air across the oil cooler and preventing possible oil overtemperature. If the oil temperature exceeds approximately 300°F, chemical changes occur which destroy the lubricating quality of the oil. This could result in serious damage to the engine and/or the generator constant speed drive. Once airborne, the air ejector valve is closed via squat switch actuation and the oil is cooled by ram air.

During the October 1976 Deputy Commander for Maintenance (DCM) conference, one DCM suggested that a policy be established to check the valve operation prior to taxi, shut down an engine which had a valve that did not operate, taxi to the end of runway, restart the engine and take off, thus minimizing ground operation time. An operational supplement to the flight manual (1B-52G-1S-257) was issued to provide such a procedure for taxi and take off with an inoperative air ejector valve. This supplement provided, "Any engine which does not have cooling air flow will be shut down. However, if only one engine is affected (must not be engine 4 or 5), the mission may be continued by restarting the affected engine within five minutes of takeoff without cooling air (up to 10 minutes at idle power is authorized for unexpected delays). After landing, the affected engine will again be shut down if taxi time exceeds five minutes. Avoid shutting down a combination of engines that would result in electrical power being reduced to only one operating generator." While this procedure aided maintenance, it did not allow aircraft sorties to be continued with inoperative air ejector valves on engines 4 or 5. Engines 4 and 5 provide hydraulic pressure to the brake systems. In addition, the five minute operating limitation (ten minute maximum) provided a somewhat limited time for the aircrew and caused an interruption in the normal crew checklist procedures.

In January 1977, LGME suggested the elimination of the engine shutdown requirement with the

proviso that ground operation with an inoperative air ejector valve be limited to the normal SAC pre-takeoff timing of 30 minutes. In addition, it was suggested that the post-start check for cooling air be retained to insure that inoperative air ejector valves would be identified and repaired/replaced prior to subsequent flights. This would allow identification of the problem to the aircraft commander so that he would limit any post-landing ground operating time to the same 30 minutes. Oklahoma City Air Logistics Center (OC-ALC), the prime depot for the B-52, requested a test be implemented to obtain oil temperature versus time data. This was necessary to determine whether the ten minute time limitation could be extended. As a result, LGME developed the necessary test procedures and test equipment and performed the test at various ambient temperatures (25°F to 95°F) at Barksdale, Blytheville, Castle, Ellsworth, and Wurtsmith. Based on the data obtained during the test, it was proven that engine oil temperature is not adversely affected when the engine is operating at idle. In addition, limited engine operation above idle for some preflight checks (i.e., horizontal stabilizer check) will not cause engine oil temperature to reach the 300°F upper limit. In fact, the oil temperature appears to reach a plateau and does not continue to increase even if the engine continues to run. After reviewing the data, the 1st Combat Evaluation Group and OC-ALC issued the operational supplement.

As an old tire kicker, I know that the maintenance man's goal is to see the aircraft go on time. A major result of this addition to the Dash One flight manual will be more on time takeoffs and a resultant boost to the maintenance man's morale as well as an increase in unit effectiveness.



I heard you Sgt Yingst, forty-five minutes running time. What I want to know is who reimburses me the \$19.95 I just spent on a new fan??

BIG INSTRUMENT

VECTORS, RADIOS, AND LANDINGS

Captain Tome H. Walters, Jr.
1st Combat Evaluation Group
Barksdale AFB

VECTORS TO AN APPROACH

When did you last follow radar vectors to a non-radar final approach? Odds are, your last flight. Enroute descents are usually vectored and we normally ask for vectors from one approach to the next. Since vectors are a routine part of the approach phase of flight, let's look at two areas that deserve emphasis: headings and altitudes.

Headings — Where will radar vectors position you for an approach? AFM 51-37 gives the following general guidance.

(1) Vectors to a nonprecision final approach fix (FAF), other than a localizer, should place you at least one mile prior to the FAF at an intercept angle of 30° or less.

(2) Vectors to a localizer or ILS should place you three miles prior to the FAF or glide slope intercept point with a 30° intercept angle (or less). There is a qualifier added to the three miles: You will be vectored for the full three miles only when the reported weather is below VFR minimums. All other times you receive a one mile intercept — unless you request more.

Vectors usually work out well, but sometimes the positioning gets a bit tight — usually due to winds — and then it's punt, pass, and kick while you try to intercept the course, configure, slow, and descend right on top of the FAF. That need not happen. First, monitor your position in relation to the FAF. Second, adjust the final heading if drift or an incorrect intercept angle won't allow course intercept prior to the FAF. When a controller assigns a final heading and clears you for the approach, he intends for you to maintain a ground track to the intercept point. If an adverse condition (miscalculated heading or winds) offsets the intercept, common sense and good judgment dictate that the pilot apply a proper correction. If a correction is required due to

winds, let the controller know so he can adjust the headings for the next guy.

Altitudes — When can I descend when cleared for the approach? When you are established on a segment of the approach. That's sufficiently vague, but 51-37 goes on to define "on course" when being **vectored** for an approach by stating, "It is within 2½° of the course with an intercept heading." Momentary deviations outside the 2½° don't require you to discontinue descent except for a localizer (since that's full scale deflection). The purpose of the "momentary deviation" allowance is to give you time to kill the drift.

A final note — winds and drift corrections play an important part during many phases of flight. Since 135 and B-52D pilots don't have a drift-meter, pilot and nav coordination is required. Next time you mission plan, buy your nav a cup of coffee and work out what kind of drift information you want and when you want it.

LOST COMMUNICATIONS

SAC pilots seldom face the problem of losing communications. The new solid state radios make such an eventuality even less likely. Since we rarely face the problem, there is an understandable lack of understanding of lost communication procedures. That fact surfaces when the pilot briefs the approach. What are the requirements for coordinating lost communication instructions?

First, you are required to coordinate lost communication instructions with ATC if you are making an enroute descent to a **radar** final. You can simplify the whole process by telling the controller what you intend to do, rather than asking him to give you lost communication instructions. To make it doubly simple, request an enroute descent to a specific FAF, as 51-37 instructs. The radio calls might sound like these: "Mod 51, what type ap-

proach are you requesting to Barksdale?" "Fort Worth Center, Mod 51 is requesting an enroute descent to the Elm Grove VOR for a PAR approach. In the event of lost communications, we'll fly the VOR Rwy 32 approach straight-in."

In the terminal environment, radar controllers will volunteer lost communication instructions **only** if IFR conditions are likely to be encountered. When it's clear and 20, you won't receive any instructions and you are not required to ask for any. You would be expected to go VFR and land. That's consistent with the purpose of lost communication procedures — to coordinate action in IFR conditions. If you think it would be easier to fit in the traffic flow by coordinating instructions with the controller, that's fine. However, he would prefer you keep it brief and simple.

LANDING COMPULSION

We had flown an all-night (it seemed) sortie at U-Tapao and were on final about 0200. The aircraft was scheduled to turn for an early morning sortie. At a mile we picked up some unexpected turbulence that destabilized the approach. The pilot initiated a missed approach. The command post controller could evidently hear the engines because he began interrogating us before we said anything. We offered an explanation — turbulence, didn't feel right, took it around — and I could hear what he didn't say — "Can't hack it." When he queried us again, Charlie Tower suggested he "can" it, and received our unspoken thanks. If you have flown your aircraft for any length of time, you have experienced some type of situation where you felt external pressure — real or imagined — to land.

A recent paper by a former airline pilot, Captain Homer Mouden, working for the Flight Safety Foundation made some salient points about the compulsion to land. He suggested that human factors — pride, complacency, unawareness — exert

the most pressures on a pilot's judgment. Looking back, I suspect each of us has pressed on with a landing and quietly decided, after the fact, that it was not the best decision.

In his article, Mouden writes, "Psychologists tell us that the process of making decisions creates stress within the individual, but once a decision has been made, there is a definite feeling of relief. Thus, even if that decision subsequently is determined to have been a wrong one, there may be a tendency to stay with it, regardless of the consequences."

This is especially applicable to landing from an approach in marginal weather. The decision making process from decision height to touchdown is compressed into a few seconds. That definitely is a factor in the landing decision.

The purpose of discussing landing compulsion is not to get the go-around rate up, but rather to insure each pilot is mentally prepared for the **possibility** of going around from every approach. Every pilot has the option to take it around at any time, right down to wheels on the ground. It's not even necessary to hyperventilate, since a go-around is not an emergency procedure — just a decision not to land.

FLIGHT PLAN CHANGE

When you need to change your route of flight, try the DRAFT method. DRAFT stands for destination, route, altitude (alternate, if required), fuel endurance, and time enroute. If the ATC agency controlling you has the time to take your change, DRAFT covers the information the controller needs. You'll note DRAFT covers items 8-12 of the 13 items listed on the back of the Enroute Supplement under change of route or destination. Once you amend your clearance with ATC, then contact a Flight Service Station and pass the complete flight plan change. ↩

r&d corner



Captain Joseph M. Vairo
HQ SAC/XPHV, Offutt AFB

SAC'S NEWEST TANKER A military derivative of the McDonnell Douglas DC-10 will become SAC's next tanker in the early 1980s. The official military designation is KC-10A. The primary requirement for the KC-10A stems from the need to achieve worldwide mobility of U.S. General Purpose Forces, independent of forward basing in foreign countries. This capability to project U.S. forces is an essential factor in supporting U.S. policy goals as the need arises. Today's capability (KC-135) is dependent on overseas basing and is limited in its ability to provide large off-loads at great distances.



The KC-10 will overcome many of these deficiencies.

The McDonnell Douglas DC-10 was in competition with the Boeing 747 during a source selection at WPAFB. This head-to-head competition, which lasted over a year, covered such areas as life cycle cost, operational capability, logistics support, and cost per airframe. The Air Force plans to buy approximately 20 KC-10s at an average unit fly away cost of about \$35.5 million in FY 78 dollars. The first KC-10 will roll out of the Douglas Long Beach, California, facility in February 1980, with the turn-

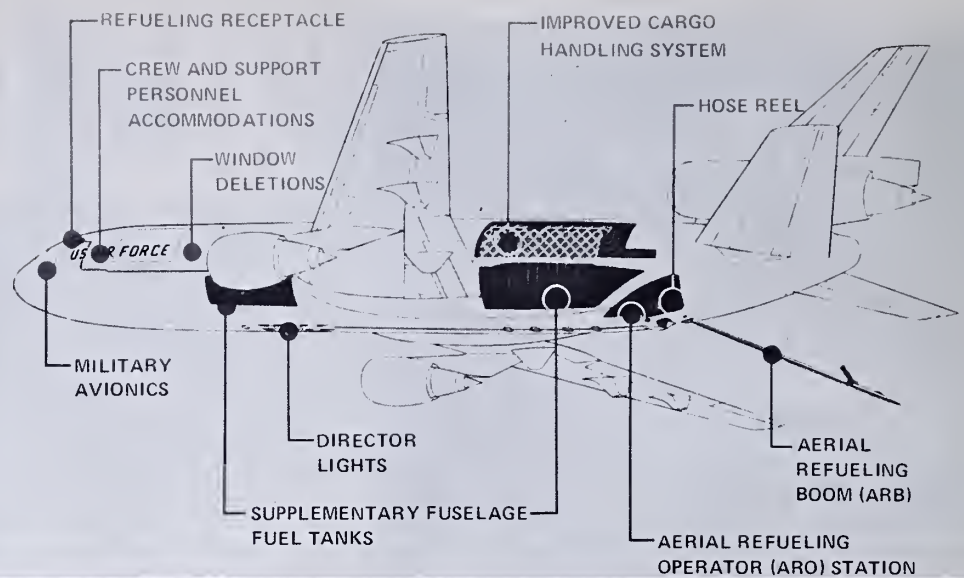
over to SAC for operational test and evaluation scheduled for October 1980.

The Air Force has minimized the cost of the KC-10 program by making only those modifications necessary to accomplish the tanker mission while retaining the aircraft's inherent cargo carrying capability. These modifications include an advanced aerial refueling boom, hose reel system, seated aerial refueling operator station, supplementary fuselage fuel tanks, aerial refueling director lights, and peculiar military avionics such as a UHF radio, radar with beacon capability and a TACAN. An air refueling receptacle installation will allow the KC-10 to be refueled in flight. In addition to these modifications, the KC-10 will have thrust reversers, triple INS, Ground Proximity Warning System, optional provisions to carry 80 personnel and cargo capability (170,000 lbs) to routinely carry up to twenty-five 463L pallets.

The SAC crew flying the KC-10 will consist of a pilot, copilot, systems operator, and a boom operator/load-master. No decision has been made regarding the description of the systems operator. Alternatives are a pilot systems operator, a navigator systems operator, or an enlisted systems operator. The crew ratio will be 3.0:1 divided equally between the active and reserve forces. This crew ratio will provide the KC-10 with a capability to surge to 10 hours per day for approximately 45 days. Individual crew qualifications are still undetermined.

Logistics and maintenance support will be a mix of organic "blue suit" and civilian contractor personnel. AF flight line personnel will perform organizational and limited intermediate maintenance. Air Force responsibilities will be those functions necessary to manage, launch and recover the KC-10 such as pre-flight, post-flight, thru-flight inspections, troubleshoot malfunctions, and remove and replace Line Replaceable Units and engines. As the logistics support contractor, Douglas will be responsible for the majority of the support requirements which include intermediate level depot maintenance, as well as spares support and support equipment for the aircraft. This maintenance concept will enable the Air Force to take advantage of world-wide commercial maintenance facilities already in existence.

The first KC-10A will be flown for a year in two phases of testing: pre-delivery testing for six months prior to delivery to SAC and then post-delivery testing by SAC for six months. The pre-delivery testing phase consists of qualification tests to verify



COMMERCIAL AIRCRAFT BASIS ENGINE

THRUST RATING AT 86°F (LB)	52,500
CRITICAL FIELD LENGTH (FT)	10,300
DESIGN TAKEOFF GROSS WEIGHT AT 2.5G (LB)	590,000
DESIGN FUEL CAPACITY (LB)	356,065
OPERATING EMPTY WEIGHT TANKER CONFIGURATION (LB)	239,747
FUEL AT TAKEOFF, TANKER CONFIGURATION (LB)	350,253
OPERATING EMPTY WEIGHT, CARGO CONFIGURATION (LB)	243,952
MAXIMUM CARGO PAYLOAD (LB)	170,048
MAXIMUM RANGE AT MAXIMUM CARGO PAYLOAD (N MI)	3,800

DC-10-30F CF6-50

DC-10 modifications
for the KC-10.

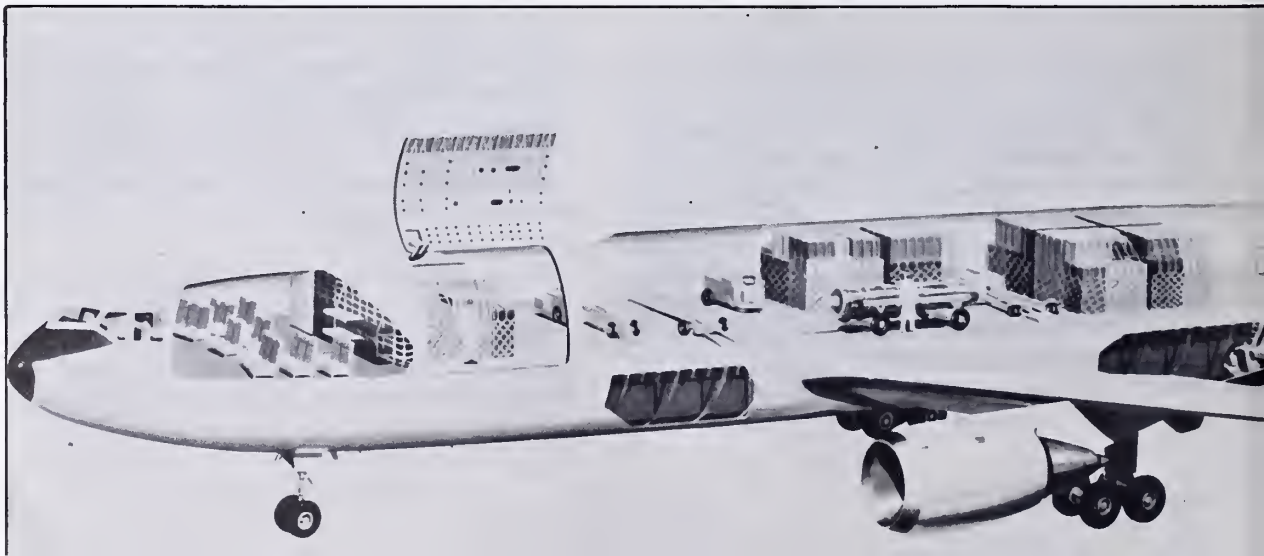
the design and assess operational aspects of the aircraft systems. When SAC receives the first KC-10 in October 1980, SAC aircrews will participate in six-month follow-on operational test and evaluation (FOT&E) designed to determine the aircraft's effectiveness in an operational environment.

Test team participants include the Douglas Company, Federal Aviation Administration (FAA), AFLC, AFFTC, AFTEC, SAC, MAC, TAC, and the Navy. Air refueling qualification will be accom-

plished with the C-5, F-4, A-10, F-15, A-4, S-3, and F-14 during the pre-delivery phase. Additional aircraft will be qualified during FOT&E, including the KC-10 itself.

The KC-10 provides the capability to project U.S. forces worldwide in minimum time. Wide body technology of the DC-10, combined with an air refueling system, presents a long range, reliable tanker that will contribute to the protection of U.S. interests anywhere in the world.

KC-10 with typical fighter deployment load.



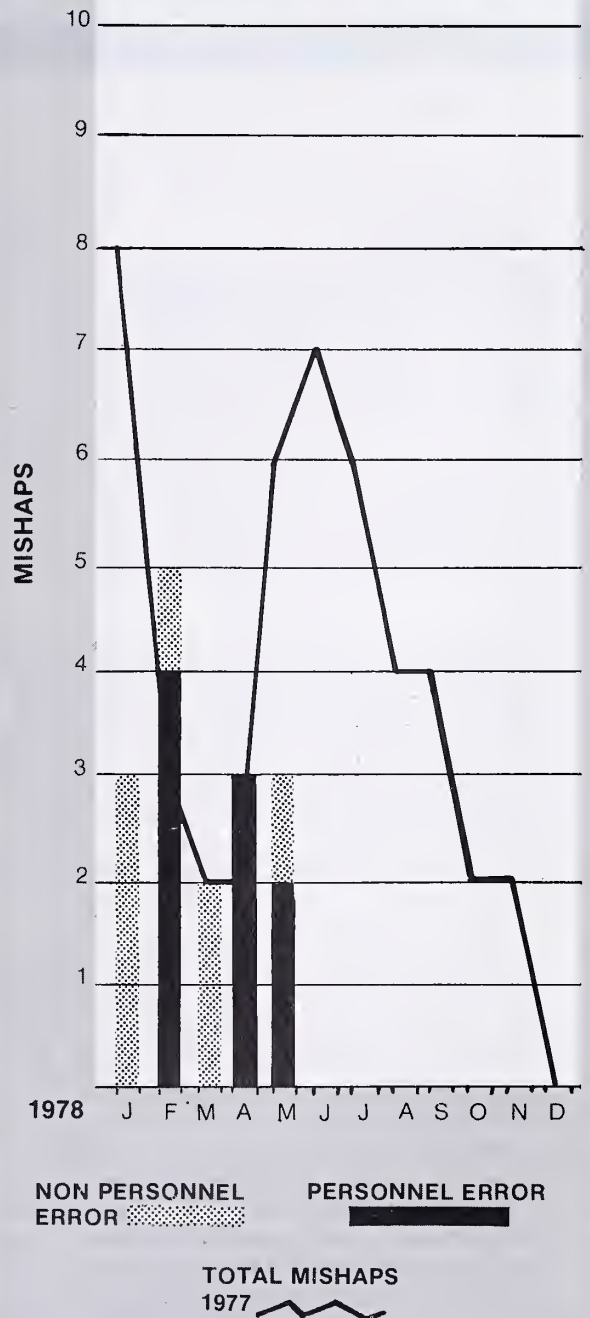
OPS HAZARDS

The mission was scheduled as a routine training flight. The preflight was uneventful. The boom operator checked the overwing hatches in accordance with checklist procedures, re-installing them in the same locations he found them. Prior to takeoff, he made the required check for hatch security. Everything appeared normal. Just after rotation on takeoff, the cargo door warning light illuminated. The boom operator checked off interphone to scan the cargo door. At this time, the crew noticed rubber smoke from the nose gear and the boom operator noticed that the cargo door pressure plates were open. Although he didn't have a flashlight, he believed one of the cargo door cams was not locked, and noted that all four handles were up. He returned to the cockpit and got a flashlight. He told the pilot that the cargo door pressure plates were opened and returned to the cargo compartment to make his after takeoff walkaround inspection. He noted that the cargo door pressure plates were still open but all the cam locks were secure. He proceeded back to the left overwing hatch, grasped the hatch by the upper and lower handles and checked it for security. He found it loose in the opening. At this time, while he still had the hatch in his hands, it rotated forcefully and started out of the aircraft. He realized he couldn't control the hatch and released it. The hatch departed the aircraft. The command post was advised and a hotel conference was established. Gross weight was adjusted, and an uneventful recovery followed.

Postflight inspection revealed no additional damage. The right overwing hatch was removed and found to have an "L" stenciled on the outside. This is done to identify the left and right hatches. However, a check of this outside marking is not presently a part of the Dash One or Dash Six preflight. Records are being reviewed to determine when the last maintenance was performed in this area. It is recommended that all units operating EC/KC/RC 135 aircraft inspect the overwing hatches for proper fit and adjustment and that all hatches be properly marked on the inside of the hatch.

Missile Mishap Report

DOD CLASS A, B and C



From Decision Height...

To

Captain Tom Couch
904th AREFS, Mather AFB

Several recent National Transportation Safety Board (NTSB) reports introduced some startling facts. These reports examined the mishap statistics of all U.S. civilian air carriers over the past quarter of a century. Fatal civil air carrier mishaps have declined from a high of 25 in 1951 to a low of four in 1976. Yet the number of fatal approach and landing mishaps has remained relatively constant — never fewer than two and never more than six in one year.

One report concludes that “most of the mishaps or incidents occurred after the pilot not flying the approach called that he had the ground, the approach lights, or the runway lights in sight, and the pilot flying the aircraft transitioned, or was trying to transition from instrument to visual flight.” Almost 50 percent of these fatal mishaps occurred on an instrument landing system (ILS) or localizer approach after departing the decision height (DH) or minimum descent altitude (MDA). Further, low visibility caused by rain, fog, snow, drizzle, or a combination of these phenomena compromised the quality and reliability of the visual cues on which the pilot relied for vertical guidance. There are several lessons to be learned from these reports. Perhaps the most important is how to safely fly the aircraft from decision height to touchdown.

One method for flying the low visibility approach is discussed in an Instructor Pilot Instrument School (IPIS) study. “Composite Flight” is recommended. Composite flight is maintaining aircraft control by visual cues supplemented by information from the engine and flight instruments. The following information and procedures were extracted from the IPIS study and adapted for consideration and possible use by KC-135 crews. The

procedures attempt to maximize the use of composite flight from the DH to touchdown.

When flying a low visibility weather approach using composite flight procedures, each crewmember has a specific area of responsibility and specific tasks within that area. Specific titles (navigator is used instead of third pilot), tasks and responsibilities are assigned to the three primary crewmembers in the IPIS study as follows:

A. HEADS-DOWN PILOT WILL:

- (1) Fly the aircraft on the instrument approach or with the autopilot ILS coupler.
- (2) Make the landing or go-around decision predicated on instrument display information.
- (3) Execute a missed approach if:
 - (a) Commanded by the heads-up pilot or by the navigator.
 - (b) Flight path limits are exceeded, (i.e. TERPs limits, pilot exceeds predetermined airspeed tolerances or exceeds the recommended rate of descent).
 - (c) An emergency or system failure occurs.

B. HEADS-UP PILOT WILL:

- (1) Monitor the approach being flown, and autopilot coupler if used.
- (2) Assume a visual scan at a predetermined height above the ground.
- (3) Call visual cues as they become available using a predetermined terminology:
 - (a) “CUE” — Some portion of the approach lighting, runway, or runway environment.

Touchdown



(b) "Lateral," "Vertical" — Cues which can be used to visually control the aircraft, (to successfully land an aircraft the pilot must have visual references to control all three axes of the aircraft. Only the "lateral" call-out is recommended in the IPIS study.) "Lateral" — sufficient visual cues to control the aircraft bank angle and azimuth movement. "Vertical" — sufficient visual cues to control the rate of descent on an established glide slope.

(c) "Visual" — Sufficient visual cues to land the aircraft.

(d) "Go-Around" — Self explanatory.

(e) "I have the Aircraft" — Assumes control to land the aircraft.

C. THE NAVIGATOR WILL:

(1) Monitor the flight instruments.

(2) Make all altitude call-outs to DH/MDA.

(3) Command a "go-around" if:

(a) Flight path limits are exceeded.

(b) An emergency or system failure occurs.

The heads-down pilot and the heads-up pilot may both be monitoring instruments until the predeter-

mined height above ground level, but **only the heads-up pilot is allowed to lift his head to search for visual cues.** One pilot is responsible for monitoring the instruments throughout the entire approach and for flying the aircraft. Although control of the aircraft may be taken from him, he must remain heads down on the instruments. Instrument flight procedures should be used to touchdown by the heads-down pilot.

At 200 feet above ground level on a three-degree glide slope the aircraft is approximately 3500 to 4000 feet from the touchdown zone. If the final approach airspeed is 135 to 145 knots, you have less than 20 seconds to bring the visual cues into your cross check, ascertain your lateral and vertical position, determine a visual flight path and make corrections. It is difficult and often dangerous for one pilot to fly the approach and look for the visual cues. Fixation on lights, abandoning the approach too soon, and "ducking under" are only a few of the more deadly mistakes often made. Composite flight techniques suggested above provide for a more fluid transition from the instrument to visual flight conditions and a safer approach from decision height to touchdown.



"T.O.L.D. YOU SO" If you've been to the T-38 ACE detachment recently, you have probably noticed that Takeoff and Landing Data (TOLD) is at the top of Standardization Hit Parade. It may sound like the same old song, but a recent Class A Mishap indicates a need for a review. Sure! Everyone can define CEFS, RS, and SETO; but, it's a good bet that the unofficial homefield go/no-go speed is 155 KIAS. This figure probably works 99 44/ 100% of the time, since all the ACE detachments operate from 11,000 feet plus runways. However, if you take your trusty T-38 to a pressure altitude of 3,500 feet on a warm day and try to take off on 9,000 feet of runway, 155 KIAS will indicate nothing more than an operating airspeed indicator. Obviously, strange field operations require a little more planning than a local flight in the local area and TOLD is just one input in the decision process.

Think back on your last cross country. Now, pick an aerodrome and let's go through a quick review.

Did you compute your takeoff data?

Did you take off on the longest runway?

If you did an intersection takeoff, did you recompute your data?

Those questions were probably easy to answer. Now let's separate the pilots from the passengers.

Did the runway have an overrun or displaced threshold?

If it did, how long was it?

What was the terrain in the vicinity of the airport?

The last question in the review is designed to separate the able aviators from the mere mortals.

What type barrier was installed and could you engage it in a T-38?

Unless you picked a UPT base, the chances are that there was no barrier compatible with the T-38. The MA-1A may be a dying breed. In fact, a number of MA-1A barriers have been modified to a tail hook only configuration. Even if a normal MA-1A was available a quick look at the IFR supplement will usually indicate a special request up to 30 minutes prior is required to raise the barrier.

This review was not intended to embarrass anyone, but if you were unable to answer the questions it may indicate that you have become complacent. If you are complacent, you had better be lucky because being complacent eliminates the possibility of being good.

Capt Ted Schofield
ATC Flight Safety

NO ONE EVER TOLD ME As a result of several control stick/seat pack interference problems, the T-38 was modified with a zero/negative-G retention strap. Additionally, aircrews were warned that seat pack movement could be a problem even if you strap in tight. However, no one ever said just what to expect during zero/negative-Gs **with** a retention strap installed. Obviously, everyone figured that the retention strap was a satisfactory "fix." Unfortunately, everything doesn't always work the way it's supposed to. While it is true that the retention strap will normally hold the seat pack down during zero/negative-Gs, there are some Murphys.

Murphy #1. The strap has to be properly installed and attached to work. Sounds obvious

HAZARDS OF DEPLOYMENT

Continued from page 10

The penetration and approach seemed to take forever. We probably could have prevented this by establishing our own separation earlier. Those controllers were not the friendliest bunch of people I've ever run into.

In order to obtain 10 miles separation between aircraft of a cell, a speed schedule must be implemented such as number one increasing IAS 30 knots, number two 15 knots, number three no change, and number four reducing 15 knots. The airplanes won't separate by themselves and the controller cannot direct you until separation has been established. Again, that briefing by the cell leader surfaces.

The pilot really had difficulty briefing the approach. The radios required extreme concentration due to all the traffic, instructions, advisories and whatever.

Unfortunately, you'll never see the time when you can stop the airplane, get the terminal FLIP out, and sit there uninterrupted, and listen to the pilot brief the penetration. You can, however, spend a few minutes prior to takeoff and thoroughly cover the penetration in expectation of what is inevitably going to happen.

After attempting to land at Barbers Point NAS, the pilot finally got the beast on the ground.

Approaching Hickam from the west on final approach, Barbers Point NAS lines up perfectly. So perfectly, in fact, almost all first-time arrivees will attempt to land. Beware, Barbers Point NAS is a busy airport with an active traffic pattern at 2000 feet.

I'm here to tell you I was happy, tired, and ready for that mitai. I just couldn't believe all the things that went wrong. I was thinking I learned more on this flight than all my previous flying combined, when all of a sudden, the pilot was yelling at the copilot and simultaneously the airplane came to a screeching stop throwing our passengers to the floor.

Keep your passengers strapped in until the airplane is parked and you're ready to deplane them.

The number 3 hydraulic pump failure light had come on again, but went unnoticed. When the pilot cut the outboards we lost nose wheel steering and we almost ran into a 747.

You've heard about the guy cutting the inboards at night with number one generator failure. Well, this is a new twist with even more potential for excitement. Anticipate fatigue and remember, it can happen to you.

Ready to hear about our flight back?

doesn't it? Think about it, have you ever been guilty of assuming "that's the crew chief's job"?

Murphy #2. True, the strap works well when new, but how effective is it when it's worn and frayed? Like everything else, it requires some care and attention and will eventually wear out. Write it up if necessary and get it fixed.

Murphy #3. The strap attaches to the bottom of the seat pack right? What holds the top half of the seat pack to the bottom half? Have you ever looked at how the seat pack is made? The retention strap can be properly secured to the bottom of the seat pack but if the seat pack is not properly closed and locked, the top half can separate and cause stick interference and seat pack collapse. Besides the control stick interference that would result, consider the fact that now you would be sitting about 4 inches lower than normal.

What's the answer? There are a lot of things that can and may be done. The retention strap itself may be redesigned and the Dash One may be changed. But whatever happens, the solution rests with **YOU** the pilot. **Visually check** the condition of the strap and associated hardware during preflight. **Exercise care** when removing and attaching the strap. Make sure the **seat pack** is properly **closed** and **locked** to minimize the changes of seat pack separation and collapse. Strap in **TIGHT**. Consider the consequences and mission requirements when planning intentional zero/negative-G maneuvering. If you do experience any problems, tell someone so we can get it fixed.

Capt Seeley
ATC Flight Safety
Randolph AFB

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.



Titan Crew S-202, 381st Strategic Missile Wing, McConnell AFB: MCCC Capt William L. Capella, DMCCC 2Lt John G. Riviera, BMAT SSgt Myron A. Vondielingen, MFT TSgt Kenneth D. Delouche.

TITAN

Crew S-202 is responsible for developing, proofing, and maintaining all weapon system and EWO evaluation kits which are used to measure the proficiency of all missile combat crews at McConnell. Consequently, their responsibilities form an important part of the foundation of the Standardization Division. In addition, the crew wrote the scenario which tested the 381st SMW Battle Staff capabilities to effectively respond to an operational readiness inspection. Due to their weapon system proficiency, they were selected to provide missile complex support for the 1978 Olympic Arena Maintenance Competition. Crew S-202 is an active member of the missile potential hazard team (MPHT). They provided technical assistance during a potential fuel trailer leak at complex 553-03. Their expertise in directing crew actions brought a quick resolution to the problem. In another instance, they performed the duties of the MPHT for a suspected silo equipment area oxidizer leak. They directed the crew on duty to perform the applicable checklists to resolve the problem.

While on alert at missile complex 533-06, the MFT discovered that several mechanical eyewashes had been incorrectly installed and did not function in accordance with SACM 127-101. A hazard report was initiated by the MFT which corrected the deficiency throughout the missile wing. The BMAT and MFT also discovered that the dampers for diesel exhaust had been installed backwards, which would have resulted in a potential missile hazard had the diesel started. The crew took action through the Technical Engineering Division to correct the problem at that complex and throughout the wing.



Minuteman Crew R-075, 341st SMW, Malmstrom AFB: MCCC Capt Gary Bourret, and DMCCC 2Lt Steven Brugger.

MINUTEMAN

While on alert at Hotel launch control center (LCC), Crew R-075 prevented damage to equipment worth approximately 2.9 million dollars. Unknown to the crew, the exhaust blast valve had silently crept shut. This deceptively created an overpressure condition and the normal environmental control system (NECS) continued to operate, while the equipment air flow gradually ceased. In most cases of NECS failure, the emergency air conditioning unit (EACU) will start automatically. In cases like this, however, equipment damage will occur unless the crew recognizes the problem and takes action to manually start the EACU within two minutes. The first indication of the problem was the continual flushing of the LCC toilet. Lt Brugger then noticed a paper advance problem with the computer system printer. A self-test of the printer was successful, and as Capt Bourret inspected the printer, he realized there was reduced air flow to the electronic racks. The crew immediately analyzed the indications as a blast valve problem and manually started the EACU in accordance with weapon system technical orders. They restored cooling air to the LCC, and as a result of their timely actions, probable equipment damage was averted.



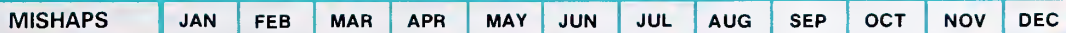
TSgt Ronald R. Belshe, 55th FMS, Offutt AFB.

MAINTENANCE MAN

As NCOIC of the Propulsion Branch, TF33-P5 Engine Section, Sgt Belshe implemented a rigorous training program with outstanding results. Engine pipeline time was reduced by 51 percent and test cell rejects were eliminated. The number of engine failures decreased from 1.39 to .54 per 1000 flying hours and system reliability was more than doubled. Sgt Belshe is constantly alert for improved methods and procedures. He has submitted 25 AFTO Forms 22 to improve technical data, all of which have been approved. He developed new procedures for engine turbine rotor repair which reduced the engine NMCS rate from 13.5 days to 2.2 days with substantial savings to the Air Force. Sgt Belshe was subsequently assigned as NCOIC of the Propulsion Branch Quality Assurance Section. In this capacity, he implemented controls which resulted in increased maintenance quality. Not only have there been no technical inspection unsatisfactory ratings by the Wing Quality Control, 80 percent of the engines have been rated outstanding or excellent.



1977 RATE	.00	1.66	1.07	2.42	1.96	1.64	1.43	1.23	1.09	1.30	1.18	1.09
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25

... the 1st STRAD story

Continued from page 7

ning was the key to a safe operation, and LaCombe knew it.

That's why the safety office briefs each task force thoroughly the day after they arrive. That's why a separate launch support plan is prepared for each launch and the launch support team is briefed at a meeting just hours before launch to discuss each step of the operation. That's also why the all-too-familiar uneasy feeling began to invade the safety technician's mind even as he checked off item after item on the launch support plan.

A few dozen launches ago he would have tried to push any doubts aside, but the experience of time and several tense situations had taught him to use the extra adrenalin constructively. He rehearsed his emergency responses and actions mentally and reassured himself that all team members knew what was required of them. Besides the emergency response units positioned here in the fallback area, launch analysis experts from the ISTRAD Test and Evaluation Deputate were waiting in the Launch Support Center to analyze and respond to launch-critical malfunctions, abort or hangfire situations.

There was little time to ponder the "what ifs" tonight. The final support vehicle was in place, and the wrecker which had rescued it was backing into its position at the end of the fallback area. (The support truck driver had become disoriented and got stuck in the soft Vandenberg sand.) Small problems sometimes amplify themselves in the wee hours of the morning. The advantages of an 0230 operation outweigh the loss of sleep,

LaCombe mused as he remembered the recent NASA LANDSAT-C Thor launch when more than 3000 invited viewers included the state governor. They, in addition to local sightseers, fishermen, photographers, and hunters, had made for an interesting Sunday morning. All support units were in place, and this fact was relayed to the Command Post along with a listing of all persons in the caution area, their location and purpose.

"We're ready, captain," he reported and with the team chief's concurrence told the security police controller to "go hard." As if on signal, the announcement came over the countdown net. "CSO, verify missile flight hazard and caution area clear and ready for launch."

"CSO, verified."

That step in the count meant T minus 15 minutes. When the area "went hard" all vehicle movements within the caution and hazard areas ceased. Personnel were to remain at their stations until completion of the operation. In fifteen minutes a long and fiery climax to days of work and planning would cause Vandenberg residents to stir in their sleep and realize that all is not well with the world and defense of our way of life is a 24-hour-a-day job.

As he scanned his completed checklist items, LaCombe's safety-programmed mind thought of the refurbishment crew, already waiting to begin cleaning up the launcher and getting it ready for the next launch. Suspended from a crane in the seemingly bottomless silo, these specialists from the 394 TMS inspect, repair, clean and paint after each launch.

When the next missile was installed, they would cover the areas and equipment which were subject to blast damage with a heavy coating of protective material they call "pucky." He wondered where the refurbishment portion of their job ended and the launch preparation part began. Refurb is a difficult and hazardous job. But the refurb crews are professionals with a positive safety attitude. This is borne out by the fact that almost every refurb task safety inspection report is filed reflecting "no discrepancies noted."

"T minus 10 minutes . . . MARK! And counting. LCMO, close LF-26 autocollimator slot."

Now the batteries in the instrumentation waver on the missile would be activated. The autocollimator slot "guillotine" would slam shut sealing the silo equipment area from the tremendous heat of the rocket motors. The fact that the ISTRAD Commander in the Launch Operations Control Center had decided to pass the T minus 10 minute mark was also a good indication that there would be no weather hold in the count. This was good, not only because of the delay, but because the eyes of many are on this launch and any hold might be mistakenly interpreted by some as a reflection of weapon reliability, regardless of the actual reason for the delay.

But there was no hold. At T minus 4 minutes the response vehicles were lined up on the roadway, ready to roll. The firefighters and maintenance teams stood on the roadway alongside the vehicles, staring into the darkness in the general direction of the launch facility.



Specially trained security policeman serving on the missile operations support crew sets up a road block prior to launch.

"T minus 10 seconds . . . 9 . . . 8 . . . all vehicle lights were off except the steadily rotating red beacon on the lead vehicle, which rhythmically painted a red streak on the hillside. Seven . . . six . . . five . . . someone took a deep breath and held it . . . four . . . three . . . two . . . the LST chief picked up the direct line . . . one . . . ignition!"

The first sign of life from the launch facility was a bright pink glow on the clouds 3000 feet above. Then the flames from the silo could be seen, and after what seemed like several seconds the missile nose appeared from the flame and rose steadily skyward. Seconds later, the shock wave and sound reached the fallback area, and the rumble seemed to vibrate the ground. The unleashing of such a weapon, even in a controlled test launch, is awesome.

Now the entire area was bright as day as the team chief spoke calmly

into the phone. "Looks good from here, the trajectory looks OK and we can't see fire . . . so far." Then, "OK, we're rolling."

As the missile disappeared into the clouds above, the safety van moved into second position in the already moving line of response vehicles and proceeded to the launch facility.

As they arrived at the still-smoking silo, the fire chief directed his crews around outside the fenced launch facility to extinguish small fires and smoking bits of debris. The smell from the silo was pungent and unpleasant as SSgt LaCombe and the launch analysis technician went separate ways around the launcher checking blast damage and looking for unusual items and hazards, such as pieces of unburned solid propellant. The two technicians joined each other near the still warm launcher closure door and agreed that the launcher was ready for post-launch safing. The safety officer was on the

gate phone and had received Command Post approval to release road-blocks. Soon the crane was on site and environmental health technicians from the base hospital, protected by their self-contained breathing apparatus, were lowered into the silo to take air samples. No artificial ventilation would be needed tonight, the ocean breeze was clearing the area effectively.

Within the hour the launcher would be a beehive of activity. Some equipment was time-critical and must be removed and cleaned within specified time limits. The maintenance team chief had already assumed control of the area and the launch tube safety barrier was in place. He seemed to have the situation well in hand as LaCombe headed for the support van. The captain was already behind the wheel when LaCombe slid into the passenger seat and reached for the coffee thermos.



Two of Vandenberg's main hazards are indicated on these signs.

"You'll never be able to sleep if you drink that," the captain warned jokingly. LaCombe only grinned.

As the safety van proceeded slowly through the fog toward the main base, Sergeant LaCombe sipped his coffee and spoke aloud without realizing it, "This is the damndest safety job I ever had . . . and I wouldn't trade with anybody." This time it was the captain who only grinned.

A DIFFERENT KIND OF BASE

Theirs is indeed a different kind of job on a different kind of base. With 98,400 acres of California terrain, ranging in elevation from sea level to 2,159 feet and 35 miles of rugged Pacific coastline, it has the awesome topography to match the glamour and excitement of its missile launches. Large deer herds, wild boar, and Pacific mountain lion roam its acreage. Canyons and arroyos furrow its surface, and rocky cliffs plunge to the edge of the ocean.

All of this grandeur is not without its problems. At times, a thick ocean fog shrouds the landscape making driving an extremely hazardous affair. Deer cross the roadways at night on their way to browsing areas. On a foggy night, this is particularly dangerous. Collisions between deer and motor vehicles are not uncommon. Occasionally, the damage to vehicles as a result of these collisions is severe, and the risk of passenger injury is always present. There are five major wildlife control areas situated on base. It is literally impossible to drive to any launch facility without passing through one or more of these primitive areas. The task of explaining these hazards to newcomers and visitors belongs to the Ground Safety personnel of the ISTRAD Directorate of Safety.

The ocean at Vandenberg offers its share of peril. The ocean floor just off the Vandenberg coastline is extremely uneven. As a result, unpredictable

dictable wave action is generated and it is not uncommon for a series or "set" of gentle waves to be followed by a "killer" wave reaching 30 feet in height. Strong riptides and undertow are present most of the time. For this reason, the beaches are off limits for swimming. Even beachcombers and fishermen are susceptible to the sudden onslaught of a large wave, and small children playing at the water's edge are particularly vulnerable. ISTRAD's Ground Safety technicians are continually educating the Vandenberg public on these conditions.

Brush fires are a joint concern of commanders, fire department, missile and ground safety technicians, and everyone working or residing on the base. The sprawling expanse of Vandenberg is covered with dried manzanita and chaparral brush. Whether ignited by remnants of burning missile propellant, lightning, or a carelessly tossed cigarette, the potential is always present for a

major holocaust. So real is this threat that the base has instituted a Base Brush Fire Suppression Plan that outlines the measures to be taken, in detail, for any contingency. Fire prevention and safety are serious topics at Vandenberg.

California's mild climate makes it a haven for enthusiastic motorcyclists all twelve months of the year. Accordingly, motorcycle safety is a year-round concern. The base has established an off-road area for cyclists. The Base Traffic Safety School offers a dynamic motorcycle safety course for cyclists which includes "hands on" training and a number of innovative instructional techniques. The school also conducts standard traffic training courses for vehicle operators. Many of the Strategic Air Command's future missile launch control officers, in training at the 4315th Combat Crew Training Squadron, will receive their initial USAF traffic safety training at Vandenberg's Traffic Safety School.

Vandenberg has a diverse population of SAC, AFSC, ADCOM, MAC, AFLC, AFCS, ATC, Army, Navy, Coast Guard, NASA, contractor and civilian personnel, along with a host of smaller agencies, all contributing to missile and space launch activities. Getting the safety "word" to this population requires a large and varied safety publicity effort. Much of this publicity and educational material originates in the Ground Safety Office. Guest speakers, billboards, movies, bulletins and newspaper articles are used to get the message across.

Together with command interest and individual safety awareness, the

ground safety inspection program is an important tool in the prevention of ground mishaps. Base ground safety technicians inspect over 28 major organizations on Vandenberg, ranging from the Civil Engineering Squadron to the Optical Instrumentation Section of the 1369th Audiovisual Squadron. These inspections are geared toward eliminating unsafe conditions before they cause a mishap.

The exotic world of missile and space launches requires cooperative effort and a blend of general and specific disciplines. Ground safety is a major ingredient in that blend.

Historically, safety has always been the key word at this Central California base even before the Air Force acquired it from the Army in 1957. Originally, it had been a World War II armor training center named Camp Cooke that had been selected for that specific reason in 1941. Its remoteness from populated areas and rugged terrain made it ideal for live artillery firing and tank maneuvers without endangering the surrounding rural communities.

Even today nearly 30,000 acres of land are known or suspected of being contaminated with unexpended ordnance. A continuing ordnance clearing program locates and disposes of such devices as land mines, bazooka and artillery rounds, hand grenades and 100 pound aerial bombs. It is unknown how much ordnance may still be buried throughout the base, but as a result of unit and orientation briefings, publicity and the continuing efforts of Explosives Safety and EOD personnel, to date there has never been a major mishap from this hazard.

HISTORY OF THE BASE

Camp Cooke saw yeoman service during World War II and later in the Korean War. Between wars, it lay idle; therefore, it was available in 1956 when the Air Force was looking for just such an installation to use as a missile launch site. In addition to the safety features the Army found so favorable in the past, Camp Cooke also provided a coastal location from which missiles could be launched thousands of miles into the Pacific Ocean without overflying any populated areas. Most importantly, it stood on a jutting promontory that allowed space satellites to be launched directly and safely into a polar orbit. The fires land mass due south of it was Antarctica, and the probability of a malfunctioning booster causing an incident there was rather remote.

The installation was transferred to the Air Force in June 1957 and renamed Cooke Air Force Base. Extensive rehabilitation and rebuilding was necessary to refit the base to its new role. Old buildings were refurbished and new ones constructed. Missile launch and control centers began to appear as tons of concrete and steel transformed the face of the base. Even the name was changed. In October 1958, Cooke became Vandenberg Air Force Base in honor of General Hoyt S. Vandenberg, second Air Force Chief of Staff and early proponent of aerospace readiness.

The transition culminated on 16 December 1958 with the launch of Vandenberg's first missile. The last vestige of old Camp Cooke vanished in the smoke and flame of the medium-range Thor ballistic missile

... the 1st STRAD story

that rose gracefully with a roar that could be heard for miles around — a roar that has been amplified and repeated more than a thousand times since then.

Almost 1400 major launches have been completed since that first one. Most have been SAC Minuteman ICBMs that are transported to Vandenberg from operational bases around the nation and then launched to targets over 4000 miles away to test their accuracy and reliability. Space boosters have varied in size and shape ranging from the huge Titan IIID with its 2,870,000 pounds of initial thrust to the slender Scout. Since February 1959, such boosters have placed over 450 unmanned satellites into orbit. The stringent safety standard maintained during the 1st Strategic Aerospace Division's participation in these launches is indicated by the award of eight USAF Missile Safety Plaques during the last eleven periods of eligibility. This is the highest award conferred by the Air Force in the area of missile safety. The division also achieved notable status by being listed in **Combat Crew's ICBM "Hall of Fame"** continuously since 1965. The fact that these awards were achieved in a "live launch" environment are indicative of a strong command interest, outstanding rapport among staff agencies, active participation of safety personnel in all aspects of missile operations and an aggressive missile mishap prevention program.

Launches, however, are only the visible and dramatic aspect of the aerospace activities at Vandenberg. Before each launch, maintenance

teams must repair the damage from the last fiery lift-off, restoring the launch facility to a like-new refire configuration. Civilian contractors — including the best-known names in the aerospace industry — provide technical engineering support and maintenance for the launch vehicles, sophisticated payloads, and electronic ground and airborne equipment which they have developed.

Special safety devices are installed in the boosters to provide positive means of destroying them should they deviate from the programmed flight pattern. Telemetry is added to onboard components of operational ballistic missiles to record in-flight performance for post-flight analysis. Large dome-covered antennas dot the landscape to track, command and control a variety of satellites in orbit.

Today, Vandenberg is the third largest air base in the country. A SAC base, its host command is the 1st Strategic Aerospace Division, lead by Maj Gen D. L. Gray, and the mission not only is involved with the ICBM flight tests but also the training of SAC's missileers and providing extensive logistical support for almost 100 military and contractor tenants operating on base. And with the Space Shuttle scheduled for Vandenberg in the next decade, it is inevitable that the base environment and the division's mission will change dramatically in the future as it has in the past. No matter what happens, safety will play a continuing and important role at Vandenberg AFB, a true "Hall of Fame" unit with an outstanding record of achievement.



SAC SAFETY SCREEN

5 BMW, Minot Crew S-01: P Maj Robert C Miller Jr, CP Capt Damon G Stephens, RN Capt Stephen J Vermeersh, N Capt Robert L Rottman, EW Capt Jon J Hansbrough, G MSgt James S Fogle

28 BMW, Ellsworth Crew (EC-135) R-107P: P Capt George M Xiques Jr, CP 1Lt Richard E Sarver, N 1Lt Daniel B Oedekoven, BO TSgt Paul E Jacobsen

28 BMS, Robins Crew S-04: IP Capt Raymond E Anderson, CP Capt Cary A Bass, IRN Capt Francis S Jones, IN Capt Fred R Easterlin, IEW Capt Richard G Brown, AG A1C Scott A Demaster

51 BMS, Seymour Johnson Crew E-18: P Capt Grodon D Kage, CP 1Lt Randy L. Dandurand, RN Capt Richard R Wools, N 1Lt Kim C Barnett, EWO 1Lt Gary R Seifert, G SSgt William B Brasel

90 SMW, F E Warren Crew S-143: MCCC Capt Ronald C Gilchrist, DMCCC 1Lt David A Sarver

93 BMW, Castle Crew R-111: P Capt William S Weeks, CP 1Lt Gary L Cook, N Capt Charles M Capron, BO A1C Kevin J Keehn

97 AREFS, Blytheville Crew S-103: AC Capt Charles W Nanney, CP Capt Philip Gartner, CP 1Lt Michael S McCord, NN Capt Rufus L Forrest Jr, BO TSgt Vaughn A Nichols

308 SMW, Little Rock Crew R-002: MCCC Capt Morris O Plaisance, DMCCC 2Lt John Hamburg Jr, MSAT A1C Mitchell K Broyles, MFT A1C Mark L Hyatt

319 BMW, Grand Forks Crew S-103: P Capt Jack D Deligans Jr, CP 1Lt Samuel P Goode, N Capt Gary G Crump, BO TSgt David R Hostetler

340 BMS, Blytheville Crew S-01: P Maj James R Ames, CP Capt William J Moran, RN Capt Ronald R Glinka, NN 1Lt Douglas R Kincannon, EW Capt Clifford L Jones, AG TSgt Gale P Alexander

351 SMW, Whiteman Crew E-061: MCCC Capt Donald L. Russell, DMCCC Lt Michael Reames

390 SMW, Davis-Monthan Crew E-128: MCCC Maj Thomas W Nichols, DMCCC 2Lt William L Van Sickle, MSAT A1C Paul J Vincent, MFT Sgt Allen R Murry

524 BMS, Wurtsmith Crew E-33: FP Capt James E Kmetz, CP Capt Patrick J Pauli, RN Capt James D Webb, NN 1Lt James C Henderson, NE 1Lt Marc A Wooten, AG A1C Richard L Walker Jr

909 AREFS, Kadena Crew R-118: P Capt Richard H Hodges, CP Capt Timothy B Sullivan, NN Capt Robert R Allmon, BO SSgt Thomas M Peck

911 AREFS, Seymour Johnson Crew R-108: P Capt Ronald K Ashley, CP 1Lt Robert F LeFevre, N Capt Stephen E Ward, BO SSgt Thomas S Bowie

912 AREFS, Robins Crew E-113: FP Capt Harry Klepko, CP 1Lt John A Kearns, IN Capt Wallace G Grant, IS MSgt James E Hammett

916 AREFS, Travis Crew E-107: P Capt James F Salomone, CP Capt Lyle L Ballance Jr, N Capt Loren D Morgan, BO SSgt Eddie C Masten

920 AREFS, Wurtsmith Crew E-106: FP Capt Stephen J Farrar, CP 1Lt John D Peterson Jr, NN 1Lt Merrill R Steiner, BO Amn Michael J Fryt

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system IAW SACR 127-2.



HALL OF FAME

TACTICAL FLYING

OVER TWENTY-TWO YEARS

170 AREFG, McGuire (NJANG) NONE
OVER TWENTY YEARS

171 AREFW, Greater Pittsburgh (PAANG) Mar '58

157 AREFG, Pease (NHANG) Jun '58

OVER NINETEEN YEARS

97 BMW, Blytheville Aug '58

940 AREFG, Mather (USAFR) May '59

OVER EIGHTEEN YEARS

307 AREFG, Travis Sep '59

OVER SEVENTEEN YEARS

19 BMW, Robins Oct '60

151 AREFG, Salt Lake City (UTANG) Feb '61

161 AREFG, Sky Harbor (AZANG) Apr '61

126 AREFW, Chicago O'Hare (ILANG) Apr '61

OVER SIXTEEN YEARS

134 AREFG, McGhee Tyson (TNANG) Aug '61

340 AREFG, Altus Feb '62

OVER FIFTEEN YEARS

301 AREFW, Rickenbacker Jul '62

96 BMW, Dyess Aug '62

OVER THIRTEEN YEARS

160 AREFG, Rickenbacker (OHANG) Dec. '64

OVER TWELVE YEARS

320 BMW, Mather Jul '65

OVER ELEVEN YEARS

452 AREFW, March (USAFR) Sep '66

92 BMW, Fairchild Feb '67

OVER TEN YEARS

55 SRW, Offutt Jul '67

2 BMW, Barksdale Aug '67

319 BMW, Grand Forks Dec '67

22 BMW, March Feb '68

OVER NINE YEARS

5 BMW, Minot Feb '69

OVER EIGHT YEARS

42 BMW, Loring Sep '69

141 AREFW, Fairchild (WAANG) Oct '69

28 BMW, Ellsworth May '70

OVER SIX YEARS

7BMW, Carswell Mar '72

101 AREFW, Bangor (MEANG) Mar '72

416 BMW, Griffiss May '72

OVER FIVE YEARS

305 AREFW, Grisson Aug '72

376 SW, Kadena Nov '72

379 BMW, Wurtsmith Apr '73

OVER FOUR YEARS

384 AREFW, McConnell Mar '74

189 AREFG, Little Rock (ARANG) May '74

ICBM

OVER FOURTEEN YEARS

381 SMW, McConnell Nov '63

OVER THIRTEEN YEARS

90 SMW, F E Warren Jul '64

1 STRAD, Vandenberg Sep '64

OVER TWELVE YEARS

308 SMW, Little Rock Aug '65

OVER EIGHT YEARS

341 SMW, Malmstrom Apr '70

OVER FOUR YEARS

390 SMW, Davis-Monthan Jul '73